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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/527,332

10/26/2005

Ting Liu Carlson

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EXAMINER

BADR, HAMID R

ART UNIT

PAPER NUMBER

1781

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,332	Applicant(s) CARLSON ET AL.	
	Examiner HAMID R. BADR	Art Unit 1781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE, 1/21/2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29,30 and 32-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29,30 and 32-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/21/2011 has been entered.

The rejection of claims 29-30 and 32-49 under 35 U.S.C. 103(a) over Paul et al. (US 5141858) in view of Leathers et al. (US 5,702,942) and over Kossmann (WO 00/47722) in view of Leathers et al. (US 5,702,942) is withdrawn per applicants' remarks.

New grounds of rejection are set forth below.

1. Claims 29-30 and 32-49 are being considered on the merits.

Claim Rejections – 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 29-30 and 32-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cote (1983, Ph.D. dissertation; of record; hereinafter R1) in view of Leathers et al. (US 5,702,942; of record, hereinafter R2).

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3. R1 discloses the reactions of glucansucrase in compositions comprising sucrose (i.e. donor) and maltose (i.e. acceptor). R1 discloses that the glucansucrase of *L. mesenteroides* NRRL B-1355 is capable of forming both alpha-1,6 and alpha-1,3 linked acceptor products. (Abstract)
4. R1 proposes the name alternansucrase for the glucansucrase produced by the mentioned strain. (page 54, Introduction, second paragraph).
5. R1 discloses the acceptor-reaction conditions including donor:acceptor ratios, temperature, and the enzyme-buffer systems. (page 56, second paragraph)
6. R1 discloses that fructose is formed from the donor:acceptor reaction of sucrose and maltose. (page 58, paragraph 1) The separation of fructose by chromatographic techniques is known and routinely practiced in the art.
7. R1 discloses that one of the best acceptors is maltose. (page 59, line 5). Hydroxyl groups at positions 2, 3, and 6, as presently claimed, are free in maltose.
8. R1 discloses that at higher acceptor-to-sucrose ratios, most of the acceptor product results from addition of a single D-glucosyl group to the acceptor, whereas at lower ratios of acceptor to sucrose, relatively greater amounts of higher degree of polymerization (d.p.) acceptor products are formed. These characteristics of the reactions can be used for determining the conditions to be used when acceptor reactions are used to prepare unusual saccharides. (page 77, second paragraph)
9. It is noted that the donor (sucrose) to acceptor (maltose) ratios as presently claimed are different from the experimental concentrations disclosed by R1. However, since R1 clearly discloses that the manipulation of donor: acceptor concentrations will

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result in saccharides of various degrees of polymerization (d.p.); with specific reference to higher or lower ratios of donor to acceptor compounds, these ratios would have been obviously manipulated to prepare various profiles of oligosaccharides. The determination of the optimum ratios, as presently claimed, would have been within the skill of the art.

10. R1 is silent regarding the alternansucrase of the presently claimed strain NRRL B-2197.

11. R2 discloses a mutant of *Leuconostoc mesenteroides* that produces a high proportion of alternan to dextran and a high proportion of alternansucrase to dextransucrase (Abstract).

12. R2 discloses that alternan and alternan derivatives have potential value as non-caloric, carbohydrate based soluble food additives in artificially sweetened foods (Col. 1, lines 33-35). In addition the valuable sweetener fructose is a by product of the enzymatic synthesis of alternan. (col. 1, lines 36-37)

13. R2 discloses that one of the mutants of *L. mesenteroides* obtained has been assigned the accession number NRRL B-21297 (Col. 9, lines 53-56). This strain is presently being claimed to be the source of the glucansucrase presently claimed.

14. R2 describes the enzymatic production of alternan using alternansucrase and sucrose. (Col. 13, Example 4).

15. R2 also discloses the desirability of obtaining alternan with a minimum of dextran. (col. 1, lines 48-51). This means that the strain disclosed by R2, has both

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alternansucrase and dextransucrase, and therefore, its selection to carry out the donor:acceptor reactions would have been motivated.

16. In summary, the process of oligosaccharides synthesis; in compositions comprising donor (sucrose) - acceptor (maltose) compounds through the use of glucansucrase (alternansucrase) has been clearly disclosed by R1 using strain B-1355 as the enzyme source. R1 teaches the glucansucrase reaction using sucrose as the donor and maltose as the acceptor molecules (and very importantly the role of the ratio of donor to acceptor concentration in the type and concentration of the resulting oligosaccharides). R2 on the other hand discloses strain B-21297 as the source of the enzyme (alternansucrase) and clearly sets forth the advantage of using it to produce more of alternan-type carbohydrates. Furthermore, since R2 discloses a strain which produces more of the alternansucrase enzyme (producing alpha-1,6 and alpha-1,3 linkages), its utilization would have been motivated and obvious to an ordinary skill in the art.

17. Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to follow the teachings of R1 and make a modification of those teachings by replacing the enzyme source (strain B-1355) with the enzyme source taught by R2 (strain B-21297). One would do so to make alternan-type oligosaccharides at a higher concentration. Such carbohydrates are useful as low glycemic, low calorie sweeteners which can be used in food and beverages. Absent any evidence to contrary and based on the combined teachings of the cited references,

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there would be a reasonable expectation of success in making low glycemic index carbohydrates.

Response to Arguments

In light of the new grounds of rejection, applicants' arguments are moot.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAMID R. BADR whose telephone number is (571)270-3455. The examiner can normally be reached on M-F, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hamid R. Badr
Examiner
Art Unit 1781

/Keith D. Hendricks/

Supervisory Patent Examiner, Art Unit 1781